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February 18, 2005

Ms. Dawn Gallagher, Commissioner
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333

Subject: FPL Energy Maine Hydro LLC's Comments on the December 2004 Draft
Androscoggin River Total Maximum Daily Load

Dear Commissioner Gallagher:

FPL Energy Maine Hydro, LLC (FPLE) would like to thank the Maine Department of Environmental Protection (MDEP or Department) for its efforts in drafting the Androscoggin River Total Maximum Daily Load (TMDL). The preparation of this draft TMDL represents a major effort by the staff of MDEP, and FPLE appreciates that effort.

These comments are made in reference to the draft TMDL only.

FPLE takes exception to the implications in this draft TMDL that the Gulf Island Dam may somehow be responsible for mitigating any adverse effects to the water quality of Gulf Island Pond that result from the pollutant discharges into the Androscoggin River.

FPLE also would like to note that for the past several years, the MDEP has been engaged in a stakeholder process to better define the extent of algae blooms in the pond. Throughout this process, it has been understood by all parties that the mitigation for algae blooms that result from phosphorus discharges would be the responsibility of the dischargers to the pond. As such, FPLE has not been engaged in a meaningful way on this issue and reserves its rights to seek further clarification on the conclusions drawn in this draft TMDL to the extent such implications are carried forward in the final TMDL.

Furthermore, FPLE reserves its rights to revise, expand, or otherwise amend these comments, particularly if the TMDL is used in whole or in part as a basis for issuance, if applicable, of any §401 Water Quality Certificate for the Gulf Island Dam.

We respectfully submit the following comments on the draft TMDL:

The draft Androscoggin River TMDL is inconsistent with Section 303(d) of the Federal Water Pollution Control Act and is not approvable by EPA on its face.

1. The Gulf Island Dam does not "load" the Androscoggin River

According to EPA guidance documents, a TMDL is “...a tool for implementing State water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions...”¹ EPA goes on to further state that the “...objective of a TMDL is to allocate allowable loads among different pollutant sources so that the appropriate control action can be taken and water quality standards achieved...”²

TMDLs are to be developed by states where existing point and non-point source regulation is inadequate to attain or maintain compliance with state water quality standards after the application of technology and other required controls. A TMDL must first determine the Loading Capacity (LC) of the receiving water (i.e. the Androscoggin River and/or Gulf Island Pond) based on its hydrologic and geomorphic characteristics. Once the Loading Capacity is determined, the TMDL must specify pollutant load allocations among such sources, with Waste Load Allocations (WLA) apportioned among all point sources, and Load Allocations (LA) apportioned among all non-point and natural sources.

In EPA’s view, “the TMDL process is intended to protect all waters from excessive pollutant loading....”³ The definition of “load” is found in 40 CFR §130.2(e):

“(e) Load or loading. An amount of matter or thermal energy that is introduced into a receiving water; to introduce matter or thermal energy into a receiving water. Loading may be either man-caused (pollutant loading) or natural (natural background loading).”

Thus, by definition, the TMDL is required to allocate among the above sources all “matter or thermal energy that is introduced into a receiving water....”

The TMDL identifies pollutants of concern for the Androscoggin River as carbonaceous biochemical oxygen demand (CBOD), ortho-phosphorus (ortho-P), total phosphorus (total-P), and total suspended solids (TSS).⁴

The state water quality criteria directly or indirectly impacted by the introduction of these pollutants are dissolved oxygen (DO) and the designated use of water contact recreation.⁵ Excessive amounts of phosphorus cause algae blooms, which, in turn, contribute to violation of both of these criteria in Gulf Island Pond.⁶ TSS and algae contribute to sediment oxygen demand (SOD), a “major source” of oxygen depletion in Gulf Island Pond.⁷ CBOD also creates a source of oxygen depletion in Gulf Island Pond.⁸ MDEP states that “historic sources of pollution” are also responsible for SOD.⁹

¹ Guidance for Water Quality-based Decisions: The TMDL Process, EPA 440/4-91-001, April 1991, p. 1.

² Ibid, p.19.

³ Regional Guidance on Submittal Requirements for Lake and Reservoir Nutrient TMDLs, www.epa.gov/region1/eco/tmdl/assets/pdfs/final.pdf, p.2.

⁴ TMDL, “TMDL Summary – Submittal Template,” p. 1, bullet four.

⁵ Ibid, bullet two.

⁶ Ibid, bullets two, five and six.

⁷ Ibid, bullet six.

⁸ Ibid, bullet five.

⁹ TMDL, “Determining the TMDL – Additional Model Analysis,” p. 2.

Bullet eight of the “TMDL Summary – Submittal Template” states that the Gulf Island Dam contributes to non-attainment of DO criteria “*by creating an environment of low water movement and low vertical mixing within the water column.*” Consideration of such a condition, regardless of its accuracy or inaccuracy, is inappropriate in a TMDL, as the condition is not descriptive of loading of “an amount of matter” or “thermal energy” into a receiving water. In short, such a condition is not a “load.” Rather, it is simply a description of the hydrologic and geomorphic characteristic of the receiving water that is to be the starting point for the TMDL analysis.

Since the Gulf Island Dam is not alleged by MDEP to be loading the Androscoggin River above the dam, FPLE objects to any statement or implication found within the TMDL that the Gulf Island Dam should bear, directly or indirectly, any allocation of responsibility for non-attainment of any water quality criterion in a TMDL.

Any TMDL that does not apportion all WLA & LA solely among the point and non-point sources discharging above the dam is unlawfully creating an arbitrary, capricious, unfair, and incomplete allocation and should not be approved.

2. Non-point sources of loading are neither accurately quantified nor receive a fair allocation in implementing the TMDL.

The TMDL clearly identifies non-point source (NPS) pollution as a contributing element to the current water quality measured in Gulf Island Pond:

“Sources of non-point source pollution include land use activities related primarily to residential development, silviculture, and agriculture.”¹⁰

According to the MDEP’s modeling report that was used to support the TMDL, non-point sources represent 64% of the TSS, 15% of the CBOD and 10% of the total phosphorus entering Gulf Island Pond.¹¹ In addition, three first order tributaries discharging to the Androscoggin River above the dam (Sunday River, Chapman Brook and the Nezinscot River) are identified as priority non-point source watersheds and listed on Maine’s NPS Priority Watershed List.¹² Despite this significant contribution, the MDEP fails to investigate, much less implement, NPS reductions. Rather, MDEP simply states that “*there are limited opportunities for the control of*

¹⁰ Ibid, p. 1.

¹¹ Androscoggin River Modeling Report and Alternatives Analysis, MDEP, DEPLW2001-11, June 2002. (June 2002 Model Report.)

¹² See the Issue Profile, *Maine Nonpoint Source Priority Watersheds Program*. October 15, 1998. DEPLW98-5-B98. “In 1997, the Maine Legislature enacted a law that authorizes the development of “a comprehensive watershed protection program” (5 MRSA §3331(7)). The program’s purpose is to prevent or reduce non-point source (NPS) pollutant loadings entering water resources so that beneficial uses of the lakes, rivers, streams, estuaries and groundwater are maintained or restored.

significant amounts of non-point source pollution given the relatively undeveloped nature of the watershed.”¹³

The TMDL goes on to state that “*non-attainment of class C DO criteria in deeper portions of the pond is predicted by the water quality model even if point source discharges are eliminated due to the sediment oxygen demand from natural and nonpoint sources of pollution.*”¹⁴ Apparently, the MDEP assumes that the responsibility for the legacy SOD loading from historical pollution sources, and the continued loading from non-point and natural sources, somehow is the responsibility of the dam. This presumption is not an appropriate allocation of load responsibility as noted above. It is also contrary to EPA guidance on TMDLs which states:

“In order to allocate loads among both nonpoint sources and point sources, there must be reasonable assurances that nonpoint reduction will in fact be achieved. Where there are not reasonable assurances, under the CWA, the entire load reduction must be assigned to point sources.”¹⁵

With the MDEP’s failure to explore non-point source mitigation efforts, the TMDL arbitrarily and unfairly places responsibility for mitigating the impacts of these pollution sources squarely on the backs of the others, and again creates an inappropriate WLA & LA calculation required to lawfully complete the TMDL.

Specific Comments to the Draft TMDL:

Without waiving the foregoing challenge to the legality or approvability of the TMDL, FPLE submits the following specific comments to the TMDL:

1. *Page 1, TMDL Summary. Eighth bullet.* The model run referenced in this bullet that indicates continued DO non-attainment in the event that point sources are eliminated is predicated on the discontinuance of the existing oxygenation diffuser. However, other MDEP model runs indicate that if the point source discharges are eliminated and the existing oxygen diffuser system continues to run, Gulf Island Pond will meet the DO criteria for Class C waters.¹⁶ This fact should not be overlooked and should be clearly stated in this section and elsewhere in the TMDL where such model runs are discussed.

It is also important to note that modeling runs indicate that the pond will not experience algae blooms if point source discharges are reduced, regardless as to whether the existing diffuser remains in operation or not.

2. *Page 2, TMDL Summary. First bullet.* MDEP presents little to no supporting data for establishing 10 ppb as the threshold for algae blooms in the TMDL. In fact, MDEP quite clearly states on Page 5 of the TMDL - “*There does not appear to be a good relationship between algae blooms and chlorophyll-a at any given location.*” However, the report goes on to suggest that

¹³ TMDL, “Determining the TMDL – Additional Model Analysis,” p. 1.

¹⁴ See Specific Comment 1 above for additional information regarding the modeling runs.

¹⁵ Guidance for Water Quality-based Decisions: The TMDL Process, EPA 440/4-91-001, April 1991, p. 15.

¹⁶ See model Run 0A from the June 2002 Model Report.

using pond averaged chlorophyll-a, “a good relationship is apparent in the chlorophyll-a data and observed blooms.”

This latter conclusion is based on the observation of a pond average chlorophyll-a value of 10 ppb occurring simultaneously with a bloom on August 4. This *single observation* of paired bloom-chlorophyll-a data is not, in our opinion, sufficient data upon which a significant TMDL is determined. The report acknowledges the need for additional data to better link phosphorus and chlorophyll-a levels to algae blooms. It is clearly premature to use a value of 10 ppb to establish a definitive phosphorus TMDL for this system.

3. *Page 2, TMDL Summary. Table titled “TMDL for Gulf Island Pond in PPD.”* This table identifies the assimilative capacity of the pond for the various pollutants shown and the corresponding Load Allocations and Waste Load Allocations assuming additional oxygen is injected into the pond. What is the assimilative capacity of the pond without oxygen injection? What is the assimilative capacity of the pond with the existing oxygen injection?

4. *Page 3, TMDL Summary. Margin of Safety.* MDEP’s approach of using “implicit margins of safety generated by a range of assumptions” requires, per EPA guidance¹⁷, that the conservative assumptions reflect “uncertainty about the relationship between the pollutant loads and the quality of the receiving waterbody” and be “approved by EPA”.

Please provide a listing and description of all MOS’ used in the TMDL and provide documentation of EPA’s approval of these MOS’.

For purposes of defining DO levels relative to the minimum standard of 5 ppm, it is our understanding that the MDEP adjusts model input parameters downward such that the output of the model is 0.4 ppm lower than it otherwise would be without the MDEP adjustment. Is this true? If so, what is the basis for such reductions?

What is the cumulative MOS used in this analysis?

5. *Page 4, TMDL Summary. Monitoring Plan for Phased TMDL.* We support the recommendation of a phased implementation approach for the TMDL.

6. *Page 4, TMDL Summary. Implementation Plan.* As stated above, a TMDL must be drawn up to match the loading of only point and non-point sources with allocations tied solely to those loads. Statements which claim that Gulf Island Dam “accounts for” any issue, when the dam is not included in any WLA or LA, is inappropriate for the TMDL process. By doing so, MDEP is unlawfully attempting to allocate responsibility for the introduction of matter or thermal energy into a receiving water towards an entity that is responsible for neither.

The first bullet of this section states that 60,000 ppd of oxygen is required to be injected from a new site at the Lower Narrows to comply with Class C DO criteria with all point source discharges removed. This section should also state that Class C DO criteria can be met in all

¹⁷ Guidance for Water Quality-based Decisions: The TMDL Process, EPA 440/4-91-001, April 1991, p. 7.

areas of the pond if point sources are removed and the existing diffuser at Upper Narrows continues to operate. This section should also cite the amount of oxygen that needs to be injected from the existing site at the Upper Narrows in order to meet Class C DO criteria if all point sources are removed.

The TMDL should also indicate the amount of oxygen that would need to be injected from either site to meet Class C DO criteria if all point and non-point sources are removed. Finally, the TMDL should state how much oxygen would need to be injected from either site if all point, non-point, and natural sources are removed?

This second bullet of this section states that modeling indicates that the presence of the dam accounts for about 30% of the algae levels in Gulf Island Pond with the TMDL implemented. Notwithstanding our strenuous objection to this conclusion, please provide a copy of this model run.

How is the 30% figure derived? Why is the figure based a percentage after the TMDL is implemented as opposed to before the TMDL is implemented? Does the MDEP presume that the dam is responsible for mitigating all non-point and natural source impacts after point sources have been eliminated?

Finally, the TMDL should clearly state that modeling runs indicate that the pond will not experience algae blooms if phosphorus discharges are reduced, regardless as to whether the existing diffuser remains in operation or not.

7. *TMDL Page 1. Fourth Paragraph.* MDEP states that the “*low dilution that is available for point source discharges and the poor capacity provided by the pond to assimilate wastes both result in a difficult situation for maintaining water quality.*” Given that the purpose of the TMDL is to address load into the receiving waters by point and non-point sources, and given the apparent sizeable impact of non-point sources, why does the MDEP ignore BMPs designed to reduce or eliminate the introduction of non-point source pollutants into receiving waters? Also, please provide supporting documentation for the 8.6:1 dilution ratio referenced in this section.

8. *TMDL Page 3. Fourth Paragraph. Fifth and seventh bullet.* Reference is made once again to the morphology of the river as a “*primary cause of algae blooms.*” As we have stated previously, WLA and LA are the only load factors which may be used to calculate the TMDL. In addition, modeling indicates that the blooms will not persist with point source reductions. Finally, the MDEP should point out that with no point source discharges, the pond will meet DO standards if the existing oxygenation plant continues to run.

9. *TMDL Page 5. First bullet.* We object to the manner that MDEP presents this data. Based on prior discussions with MDEP Paul Mitnik, data from the continuous monitoring data collection effort for Gulf Island Pond is not included in this TMDL. We believe the continuous monitoring data is the only meaningful source of data that can justify statements regarding the ability of the pond to meet monthly average requirements. We believe the MDEP should utilize all data available to it when characterizing the actual water quality conditions of the pond.

10. *TMDL Page 5. Last Paragraph.* The TMDL concludes “*There does not appear to be a good relationship between algae blooms and chlorophyll-a at any given location.*” However, the report goes on to suggest that using pond averaged chlorophyll-a, “*a good relationship is apparent in the chlorophyll-a data and observed blooms.*” This conclusion is based on the observation of a pond average chlorophyll-a value of 10 ppb occurring simultaneously with a bloom on August 4, 2004. This *single observation* of paired bloom-chlorophyll-a data is not, in our opinion, sufficient data upon which a significant TMDL is determined. The report acknowledges the need for additional data to better link phosphorus and chlorophyll-a levels to algae blooms. It is clearly premature to use a value of 10 ppb to establish a definitive phosphorus TMDL for this system.

11. *TMDL Page 10. First Paragraph.* The modeling estimate used in the TMDL for total and ortho-P assimilation between point source discharges and the entrance to Gulf Island Pond at Twin Bridges uses rates that differ by more than two orders of magnitude, which the TMDL report attributes to differences in water depth and the free-flowing nature of the river at these locations. While some differences may exist, estimated travel time (Maine DEP 2002) for river segments from Rumford to Jay and from Jay to the Nezinscot River are also relatively similar (similar mean depths and mean and 7Q10 flows and velocities). This conflicting scenario supports the conclusion that phosphorus sources and dynamics in the river are not yet understood well enough to support reliable predictions of the point source phosphorus loadings to Gulf Island Pond. There may be a higher proportion of agricultural land adjacent to the Androscoggin River in the river reach between Jay and Gulf Island Pond compared to the reach between Rumford and Jay. There may also be other sources of ortho-P such as agricultural runoff, river sediments, or wetlands between Jay and Gulf Island Pond which could explain the apparent lack of ortho-P assimilation in this river reach.

The wet, cool conditions of the summer, as pointed out in the TMDL report, are not representative of the low flow, warm summer temperature conditions being modeled. We agree with Maine DEP that using data generated during the wetter, cooler period (2004 data) to predict phosphorus utilization during low flow summer conditions when river water travel times and temperatures are higher is problematic. We recommend that further model predictions for low flow conditions should be corroborated with additional field data from a period that is more representative of low flow summer conditions, and addressed as such in the adaptive management program.

12. *TMDL Page 13. Second paragraph.* As noted in a previous comment, MDEP should describe all of its conservative assumptions used in arriving at its MOS.

13. *TMDL Page 20. Last paragraph.* We object to MDEP once again assigning load responsibility to anything other than point or non-point sources. MDEP has presented no evidence that the Gulf Island Dam contributes in any way to any of the pollutant load identified by this TMDL.

Please explain the difference between the chl-a prediction of 5.3 ppb outlined in this paragraph versus the 2.4 ppb level predicted in model run 0B from the June 2002 Modeling Report. What modeling parameters were changed to produce the dramatically different result?

14. *TMDL Page 22. Third paragraph.* We again strenuously object to MDEP attempts to address anything other than sources of load in the TMDL implementation. MDEP has presented no evidence that the Gulf Island Dam is a load source to the Gulf Island Pond, and any inclusion of the dam in any TMDL implementation is an arbitrary, capricious, unfair, and improper allocation of responsibility for loading into a receiving water.

15. *TMDL Page 24. Figure 10.* We note that the analysis of contributors to the Total Phosphorus Loads at Gulf Island Pond indicates that non-point sources contributed 25% of the total phosphorus load in 2004. This is a significant percentage of the overall pollutant load. As we stated earlier, we believe that MDEP should include specific mitigation measures such as BMPs for the TMDL that address the non-point pollution load source.

16. *TMDL Page 26. Last paragraph.* As stated above, a TMDL must be drawn up to match the loading of only point and non-point sources with allocations tied solely to those loads. Statements which claim that Gulf Island Dam “accounts for” or is “responsible for” any issue, when the dam is not included in any WLA or LA, is arbitrary, capricious, unfair, and inappropriate for the TMDL process. By doing so, MDEP is unlawfully attempting to allocate responsibility for the introduction of matter or thermal energy into a receiving water towards an entity that is responsible for neither.

17. *TMDL Page 27. Last paragraph.* We assume that the diurnal DO adjustment calculated for the TMDL has been done without using the continuous monitoring data collected in Gulf Island Pond. As stated above, we ask that MDEP use this data to document the observed trends and comparisons in water quality because the data provides a much more comprehensive data set from which to analyze trends. FPLE believes that a data set of roughly 17,000 data points from the continuous monitoring system provides a significantly more comprehensive assessment of actual conditions in Gulf Island Pond than the 26 data points from the Acheron study that is listed as the data source for DO levels in the TMDL.

18. *TMDL Page 42. First paragraph.* Additional monitoring is recommended for the TMDL. The TMDL is unclear on whether the monitoring will be a continuation of the existing continuous monitoring program or a new TMDL monitoring program. We presume it is the former. Please clarify.

19. *TMDL Figures 12-21.* Why has the MDEP chosen to refer to a DO compliance depth rather than listing the volume of non-attainment and maximum chl-a levels as has been done throughout this stakeholder process?

The use of a DO compliance depth is misleading in that it implies that non-attainment occurs at or below that depth throughout all segments of the pond. We suggest that the non-attainment volume and maximum chl-a levels be listed on each schematic to be consistent with the June 2002 Modeling Report. To the extent the MDEP wants to refer to a DO compliance depth, we recommend that it reference both the minimum depth where non-attainment occurs and the maximum depth where attainment occurs. For instance, on Figure 12, the minimum depth where

non-attainment occurs is at 10 feet and the maximum depth where attainment occurs is at approximately 25 feet.

20. Additional/Updated Model Runs. In addition to the clarifications on the runs noted above, we request that model runs 0A, 0B, 2A and 2B from the June 2002 Modeling Report be updated with changes from modeling inputs and included in the TMDL. This will provide a more complete description of impacts resulting from the recommendations of the TMDL and put everything on an “apples to apples” footing. Again, we ask that the schematics include the percent of non-attainment and the maximum chl-a for each run.

Thank you for providing FPLE an opportunity to comment on the Draft TMDL. If you have any questions of FPL Energy, please do not hesitate to contact myself at 623-8413 or Mike Hoover at 623-8415.

Sincerely,

/s/

F. Allen Wiley, P.E.
Director, Business and Regulatory Affairs, Northeast Region
FPL Energy

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